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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10-023,023	11/28/2001	Charles A. Drake		2401

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EXAMINER

ARNOLD JR, JAMES

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,023

Applicant(s)

DRAKE ET AL.

Examiner

James Arnold, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 18-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-17, drawn to a catalyst composition and the process of making the composition, classified in class 502, subclass 66.
- II. Claims 18-35, drawn to a desulfurization process, classified in class 208, subclass

208R. The inventions are distinct, each from the other because of the following reasons:

Inventions of Group I and Group II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process as claimed can be practiced with another materially different product such as a catalyst comprised of a metalliferous hydrogenation component on a substantially silica-free alumina hydrate.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Lynda S. Jolly on April 17, 2003 a provisional election was made WITH traverse to prosecute the invention of Group I, claims 1-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-35 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.



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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

Claim 1 is objected to because of the following informalities: The language "a catalyst composition comprising a nitrided and sulfided composition comprising" is confusing. The phrase "A nitrided and sulfided catalyst composition comprising" would better convey the metes and bounds of applicant's claim based on applicant's disclosure. Appropriate correction is required.

Claims 10, 12, 13, and 15 are objected to because of the following informalities: The use of the phrase "at least in part" in these claims renders ascertainment of the metes and bounds of the claims difficult. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake et al. (USPN 6,083,379) in view of Clausen (Structure and Stability of Nitrided Alumina-Supported Mo Catalysts) and Wu et al. (USPN 6,162,352).

The Drake reference discloses a catalyst composition comprising a cobalt compound, a molybdenum compound, and an inorganic oxide compound that was previously sulfided. See Column 4, lines 20-55 and Column 5, line 24. The reference discloses a catalyst composition wherein said inorganic oxide compound is selected from the group consisting of silica, alumina, silica-alumina, magnesia, titania, zirconia, and mixtures of two or more thereof. See Column 4, lines 20-55. The reference discloses a catalyst composition wherein said inorganic compound comprises gamma alumina. See Column 4, lines 49.

The Drake reference does not disclose the pre-nitriding of a catalyst composition comprising a cobalt compound, a molybdenum compound, and an inorganic oxide compound nor does it disclose the pre-nitriding of said composition before pre-sulfiding. The reference does not disclose a catalyst composition wherein the weight of the cobalt component of said cobalt compound as a percentage of the total weight of said catalyst composition is from about 0.1% to about 30%. The reference does not disclose a catalyst composition wherein the weight of the

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molybdenum component of said molybdenum compound as a percentage of the total weight of said catalyst composition is from about 1% to about 50%. The reference does not disclose a catalyst composition wherein the weight of the inorganic oxide compound as a percentage of the total weight of said catalyst composition is from about 10% to about 95%.

The Clausen reference discloses pre-nitriding before pre-sulfiding in an alumina supported Molybdenum catalyst. See Page 1, fourth paragraph. The Wu reference discloses a cobalt weight percent of from about 0.5 to about 50. See Column 8, lines 36-38. Wu discloses a molybdenum weight percent of from about 1 to about 50. See Column 8, lines 40-42.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Drake to utilize pre-nitrided and pre-sulfided catalyst of Clausen because the catalysts of Drake and Clausen both are used for the purpose of hydrotreating and for removing impurities. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Drake to utilize the cobalt weight percent of Wu in the range of from about 0.5 to about 50 because both the Wu and Drake references disclose the use of cobalt in the catalyst composition and it would be appropriate to use cobalt in any weight percent rendering it effective. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Drake to utilize the molybdenum weight percent of Wu in the range of from about 1 to about 50 weight percent because both the Wu and Drake references disclose the use of molybdenum in the catalyst composition and it would be appropriate to use molybdenum in any weight percent rendering it effective. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a catalyst composition wherein the weight of

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the inorganic oxide compound as a percentage of the total weight of said catalyst composition is from about 10% to about 95% because the Drake reference discloses the use of an inorganic oxide and it would be appropriate to utilize the inorganic oxide in any weight percent that renders it effective as a binder.

Claims 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (USPN 6,162,352) in view of Clausen (Structure and Stability of Nitrided Alumina-Supported Mo Catalysts).

The Wu reference discloses a process of making a catalyst composition comprising contacting a cobalt compound and a molybdenum compound with an inorganic oxide compound to provide a cobalt/molybdenum modified catalyst and sulfiding the catalyst. See Column 8, lines 45-60. The reference discloses impregnating the inorganic oxide compound with an aqueous solution containing the cobalt compound and the molybdenum compound. See Column 8, lines 53-57. The reference discloses a cobalt compound weight percent in the range of from about 0.5 to about 50 and a molybdenum compound weight percent from about 1 to about 50. See Column 8, lines 35-50. The reference discloses a process wherein an inorganic oxide compound is impregnated using an aqueous solution containing ammonium heptamolybdate and cobalt nitrate. See Column 5, lines 64. The reference discloses a process wherein the sulfiding is accomplished at least in part by contacting the cobalt/molybdenum catalyst with a decomposable sulfur compound, namely carbon disulfide, at a temperature of 380 C. See Column 6, lines 11-12. The reference discloses a process wherein the sulfiding is performed prior to contacting the catalyst with a sulfur containing hydrocarbon stream under hydrodesulfurization conditions. See Column 4, lines 60-63 and Column 8, line 60.

The reference does not disclose nitriding the cobalt/molybdenum catalyst. The reference does not disclose a process wherein nitriding is accomplished at least in part by contacting the cobalt/molybdenum modified catalyst with a decomposable nitrogen-containing compound at a temperature of from 650 C to 800 C. The reference does not disclose a process wherein the decomposable nitrogen-containing compound comprises ammonia. The reference does not disclose a process wherein nitriding is performed prior to contacting the cobalt/molybdenum catalyst with a sulfur-containing hydrocarbon stream under hydrodesulfurization conditions.

The Clausen reference discloses pre-nitriding an alumina supported molybdenum catalyst utilizing ammonia.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Wu to utilize the ammonia based nitriding of Clausen because both the Clausen and Wu references utilize catalysts that are effective for the purpose of hydrotreating and for removing impurities. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein nitriding is accomplished at least in part by contacting the cobalt/molybdenum modified catalyst with a decomposable nitrogen-containing compound at a temperature of from 650 C to 800 C because nitriding is disclosed by the Clausen reference and it would be appropriate to utilize any temperature needed for accomplishment of nitriding so that an effective catalyst composition is formed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein nitriding is performed prior to contacting the cobalt/molybdenum catalyst with a sulfur-containing hydrocarbon stream under hydrodesulfurization conditions because Wu discloses a process whereby sulfiding is performed

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prior to contacting the catalyst with a sulfur containing hydrocarbon stream under hydrodesulfurization conditions and the Clausen reference discloses nitriding prior to sulfiding.

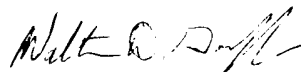
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Arnold, Jr. whose telephone number is 703-305-5308. The examiner can normally be reached on Monday-Thursday 8:30 AM-6:00 PM; Fridays from 8:30 AM-5:00 PM with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

ja
April 28, 2003


Walter D. Griffin
Primary Examiner